

Importance of Risk Communication During and After a Nuclear Accident

Tanja Perko*†

†University of Antwerp, Prinsstraat 13, 2000 Antwerpen, Belgium, and Belgium, and the Belgian Nuclear Research Centre (SCK-CEN), Boeretang 200, 2400 Mol, Belgium

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EDITOR'S NOTE

This is 1 of 17 invited commentaries in the series “Challenges Posed by Radiation and Radionuclides in the Environment.” These peer-reviewed commentaries were prepared to address some of the environmental issues raised by the March 2011 nuclear power plant accident in Japan.

ABSTRACT

Past nuclear accidents highlight communication as one of the most important challenges in emergency management. In the early phase, communication increases awareness and understanding of protective actions and improves the population response. In the medium and long term, risk communication can facilitate the remediation process and the return to normal life. Mass media play a central role in risk communication. The recent nuclear accident in Japan, as expected, induced massive media coverage. Media were employed to communicate with the public during the contamination phase, and they will play the same important role in the clean-up and recovery phases. However, media also have to fulfill the economic aspects of publishing or broadcasting, with the “bad news is good news” slogan that is a well-known phenomenon in journalism. This article addresses the main communication challenges and suggests possible risk communication approaches to adopt in the case of a nuclear accident. *Integr Environ Assess Manag* 2011;7:388–392. © 2011 SETAC

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CHALLENGES OF RISK COMMUNICATION DURING NUCLEAR EMERGENCIES

Past major nuclear emergencies include those from Windscale (United Kingdom, 1957), Three Mile Island (Harrisburg, Pennsylvania, USA, 1979), Chernobyl (Soviet Ukraine, 1986), and Tokai Mura (Japan, 2000), with important lessons related to risk communication. The communication approach taken during and after the Windscale accident drastically reduced the public acceptance of nuclear installations. It raised public discussion about nuclear energy and “had profound political effects” (Wakeford 2007, p. 212).

Poor risk communication during and after the Three Mile Island accident induced uncertainty and panic, in addition to a spontaneous and unnecessary evacuation of more than 100,000 persons (Sohier 2002). The evacuation was mainly driven by hearsay, due to lack of public information. In fact, the communication process went wrong in many aspects. It is reported (Boiarsky 2004) that writers failed to include necessary information, and they omitted necessary details, placed important information in inappropriate locations, used qualifiers to reduce perceptions of the consequences of actions, and failed to follow organizational conventions related to the transmission of information. Further, the emergency management communicators lacked knowledge of rhetorical strategies.

Decades after the Chernobyl accident, nontechnical issues in the mitigation of consequences were highlighted as one of the greatest challenges. Psychological, sociological, political, and other impacts on the public perception were long-lasting due to poor risk communication (Sjöberg and Drottz 1987; Poumadere 1995; Dubreuil et al. 1999; Schmid 2001; Jackson et al. 2002; Havenaar et al. 2003; Abbott et al. 2006; Cantone et al. 2007; Bertell 2008; Oughton 2008).

The public still remembers the Chernobyl accident 25 years after the event. Opinion polls within Europe about this accident still demonstrate large uncertainty in the population in regards to its consequences and, due to opaque communication, distrust toward the authorities, along with fear of its consequences (Van Aeken et al. 2007). The communication of the various aspects of the Chernobyl accident “became increasingly politicized with regard to related policy agendas” (Abbott et al. 2006, p. 105). The Chernobyl accident is a dramatic example of an event requiring good and transparent risk communication with the affected public, either directly or indirectly, long after the acute phase of the crisis.

RISK COMMUNICATION AS A MANAGEMENT AID TO THE FUKUSHIMA NUCLEAR EMERGENCY

Nuclear emergency management is often presented as a cycle composed of risk assessment, planning, response, recovery, and evaluation (Turcanu et al. 2008). Communication should be integrated into all parts of this cycle (Figure 1). Good communication in nuclear emergencies, such as the Fukushima accident, leads to increased awareness and understanding of emergency response measures and improves

* To whom correspondence may be addressed: tperko@sckcen.be

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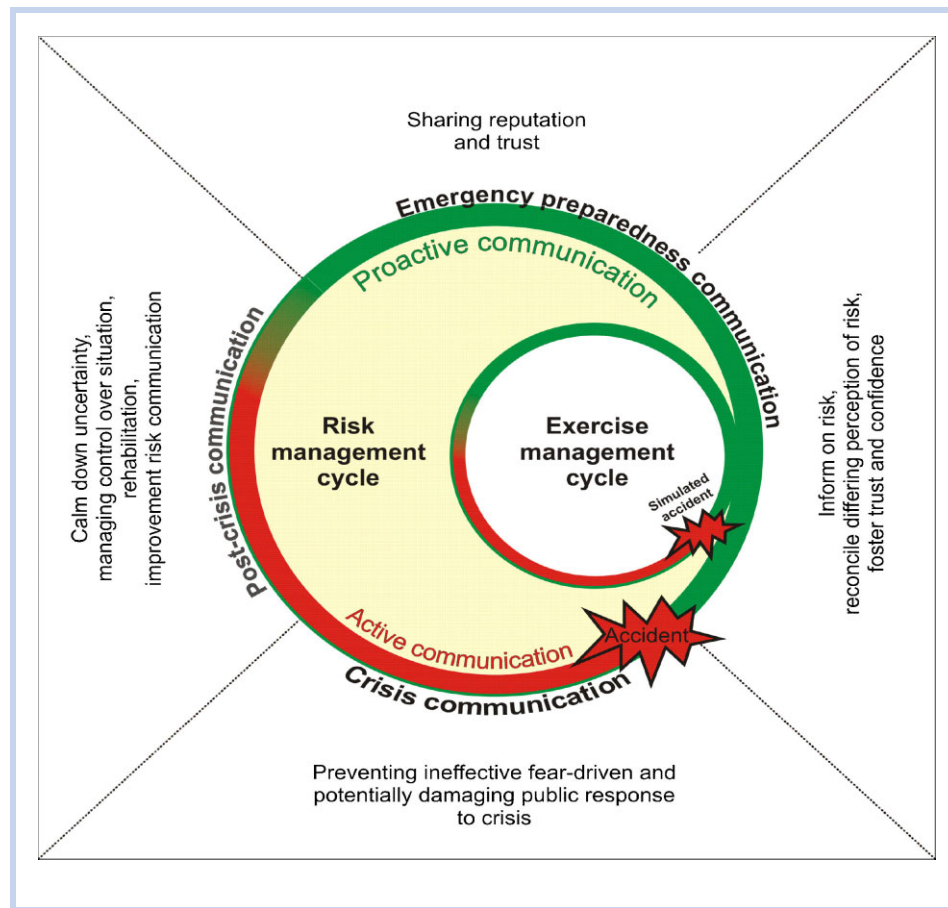


Figure 1. Risk communication in the nuclear emergency management cycle.

population response. Communication helps to adjust behavioral intentions that may intuitively seem correct but may actually cause additional negative health effects and safety consequences (Hunt 1994; Palenchar and Heath 2007). In this way, risk communication helps make nuclear emergency management fully functional.

In nuclear crisis communication, the main goal is preventing ineffective, fear-driven, and potentially damaging public response to the crisis. In postcrisis communication, the goals are highly dependent on the situation: addressing the uncertainty felt by the population, informing about the situation, building trust, and working toward a widely accepted and supported rehabilitation project by developing stakeholder involvement and partnerships. Two-way communication among all stakeholders (e.g., operators, regulators, directly and indirectly affected population, NGOs, and the international community [International Atomic Energy Agency, World Health Organization, and so forth]) is essential. Various methods, tools, and procedures could be applied in nuclear emergency management communication and stakeholder involvement, in early (crisis) communication, as well as in long-term (postcrisis) communication, as summarized in Table 1.

Communication in a nuclear accident situation should reflect and respond to the specifics of the emergency, society, and the culture. Therefore, there is no general “recipe” for sound communication in nuclear accident situations. The Fukushima nuclear accident in Japan involved unique circumstances, including multiple infra-

structure failures and competing public priorities, such as providing for the basic human needs of earthquake and tsunami victims. The circumstances of the accident have not yet been fully clarified, and the situation may still evolve, due to earthquake aftershocks or changes in the affected units.

ROLE OF THE NEWS MEDIA DURING NUCLEAR ACCIDENTS

The nuclear accident in Japan has predictably induced enormous media coverage. In general, mass media play a dominant role at all levels of communication on nuclear emergency issues. They are the prominent information channel for the general public, being used for communication by different stakeholders and acting as the “watchdog” of society. They monitor the nuclear emergency management and the subsequent remediation process. Media form a link between the emergency actors and the risk perception among the population. However, media also have to fulfill the economic aspects of publishing or broadcasting, with “bad news is good news” being a well-known phenomenon in journalism. Because of this, some broad and perhaps even exaggerated coverage of the Fukushima nuclear accident by the mass media is to be expected (Table 2).

COMMUNICATION STRATEGIES

In the early phase of the Fukushima nuclear accident, public messages needed to contain information about 1) the

Table 1. Practical recommendations for crisis and postcrisis communication in case of a nuclear accident

Nuclear emergency management communication	Early (crisis) communication	Long-term (postcrisis) communication
Goals	Prevent ineffective, fear-driven, and potentially damaging public response to crisis	Reduce uncertainty, maintain control of the situation, and facilitate rehabilitation.
How to reach the goals	- Rapid and continuous communication to the general public and affected groups	- Explain potential risks (e.g., living in a contaminated area)
	- Express empathy and address people's concerns about radiation risks	- Communicate both risks and benefits of remediation options
	- Provide information about how people can protect themselves, e.g., wash vegetables, stay indoors	- Assess radiation risk perception of the population
	- Designate crisis spokespersons and formal channels and methods of communication	- Inform the general public about ongoing risks (e.g. safety of nuclear installations) and related decision making
	- Make sure that communicators have a good understanding of the crisis circumstances and potential outcomes	- Get feedback on the risk management from affected public and clarify misunderstandings and rumors
	- Admit uncertainties, e.g., health effects of low doses	- Ensure open and transparent communication between the environmental remediation actors and the population
		- Initiate stakeholder engagement about ongoing clean up, remediation, recovery, and rebuilding efforts
		- Facilitate broad, honest, and open discussions and resolutions of issues regarding cause, blame, responsibility, and adequacy of response
		- Document, formalize, and communicate lessons learned
		- Determine specific actions to improve nuclear crisis communication and crisis response capability
Method	Active communication, balanced emotions, and facts	Proactive communication, 2-way communication and consultation, participatory methods
Tool or communication channel (selected)	- Mass media: TV, radio, newspaper, Internet	- Mass media: TV, radio, newspaper, Internet
	- Personal appearance (e.g., visit of governmental representative at the contaminated site)	- Stakeholders meetings
	- Face-to-face communication (e.g., discuss with affected family)	- Excursions
	- Meetings	- Opinion exchange
	- Leaflets, posters, letters	- Working groups
	- Web sites, e-mail, blogging, photo-sharing	- Consultancy
	- SMS (short message service)	- Focus groups
		- Personal appearance
		- Face-to-face communication
Procedure	- Establish a multidisciplinary communication team (lawyer, doctor, psychologist, person to follow media response live, radiological experts)	- Information follow up
	- Develop short messages	- Feedback follow up

TABLE 1. (Continued)

Nuclear emergency management communication	Early (crisis) communication	Long-term (postcrisis) communication
	- Develop a written public statement	- Analyze and improve communication: collect media clips, develop information for frequently asked questions (FAQ)
	- Prepare possible questions and answers	- Involve scientific research (social science)
	- Control information flow and feedback (e.g., centralize contacts with media)	- Use stakeholder involvement methods
	- Form alliances (retired nuclear engineers, academicians, family doctors, priests, and other respected figures)	
	- Open information sources: e.g., call center, information point	
	- Analyze at least every 24 h	
	- Control rumors; follow and respond to rumors	

hazard associated with emergency event, 2) instructions on a proper course of action during an emergency, and 3) instructions for the postevent phase, in order to prevent harmful effects. The most common questions addressed to the nuclear emergency management in this early phase are presented in Table 3, which is based on best judgment. Those questions need to be followed later by technical questions, as well as clarification on who is responsible for the different actions, including the role of public authorities.

CONCLUSIONS

Risk communication is one of the cornerstones of successful emergency management. In the nuclear field, crisis

communication that restricts itself to facts but fails to account for an individual’s knowledge (or lack of it), their perception of risks, and their relative inexperience is incomplete and ineffective. There is also a risk of panic or abuse of a nuclear emergency situation for political purposes. In contrast, proper and transparent communication will strengthen trust in the nuclear actors and ensure a good response to protective measures for the population. Risk communication can help people return to normal life.

The Fukushima nuclear accident will undoubtedly provide another lesson on the importance of risk communication. It is too early to evaluate how successful the applied communication strategy has been until now. We can only hope that nuclear emergency actors worldwide continue to learn from

Table 2. Reasons for media attention to the Fukushima nuclear accident

What is newsworthy for media in general?	Specifics of newsworthiness of the Fukushima nuclear accident?
Extraordinary event	Nuclear accident as a consequence of earthquake and tsunami of large magnitude No or scant past experiences with radiation risks
New or unusual information	Combination of natural disaster and human-created risk
Conflict	Questioning of transparency and decision making Humans tampering with nature
Drama	Radiation is continuously being released into the environment. Will they be able to solve the problem?
Tragedy	Dread, catastrophe, link to Chernobyl . . .
Presence of elite or celebrities	Politicians, superstars, pop idols, nongovernmental organizations, presidents of the countries, and similar individuals, and their comments on the accident
The situation (event) can be personalized	Can radiation affect me and my family? (Widespread concerns)
The event evokes emotional response	Evacuation, frightened people, ruins of nuclear installations

Table 3. Questions to be addressed in the early phase of a nuclear emergency

- How does radiation travel (e.g., wind, air, water, plume dispersion, and so forth)?
- How can radiation be spread (other people, animals)?
- How far can radiation travel?
- Will radioactivity contaminate the water and food?
- How long will the contamination last?
- How much radiation is safe?
- How are radiation levels determined?
- How are radiation levels monitored?
- What are the symptoms of exposure?
- How do individuals know if they have been contaminated or not, as symptoms might not show up immediately?
- What can individuals do to protect themselves?
- What are the short- and long-term effects of contamination?
- How will the sick and injured be treated?
- Are the hospitals able to cope?
- What is the likelihood of becoming contaminated?
- What are the sources of information?
- How can I obtain further information related to the event?

previous experiences and will not repeat the mistakes committed in historical nuclear accidents.

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